



Authorizations and Permits for Protected Species (APPS)

File #: 17095

Title: Hudson River Biological Monitoring Program (H

Modification: 2

Applicant Information

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Project Information

File Number: 17095

Application Status: **Application Complete**

Project Title: Hudson River Biological Monitoring Program (HRBMP) Permit to Take Shortnose and Atlantic Sturgeon for Scientific Purposes

Project Status: New

Previous Federal or State Permit: Federal-NMFS 1254, NMFS 1580 (ESA Research: Shortnose Sturgeon)

Permit Requested:

- ESA Section 10(a)(1)(A) permit (other)

Where will activities occur?: US Locations including offshore waters

Research Timeframe: **Start:** 01/20/2012 **End:** 08/28/2017

Sampling Season/Project Duration: Survey in progress throughout the year during a 5-year permit term.

Abstract: Applicant and co–investigators seek to continue a serially issued National Marine Fisheries Service (NMFS) Permit authorizing the take of Endangered Species Act (ESA)–listed species shortnose sturgeon (*Acipenser brevirostrum*) (SNS) and Atlantic sturgeon (*Acipenser oxyrinchus*)(AS) for scientific research purposes. Previously, NMFS issued serial ESA scientific research permits (NMFS ESA Permit Nos. 1254 and 1580) to Dynegy, Inc. in support of the HRBMP. The HRBMP involves the monitoring of various fish species abundance and distribution in the Hudson River; however, our research goals will highlight the takes of shortnose and Atlantic sturgeon from River Mile 0 (Battery Park, Manhattan) to River Mile 152 at Troy Dam (above Albany, NY) and including (seasonally) portions of New York Harbor. Hudson River electric generating companies (Generators) including permit applicant Entergy Nuclear Indian Point 2, LLC and Entergy Nuclear Indian Point 3, LLC and co-investigator GenOn Bowline, LLC will continue the HRBMP consistent with New York State Department of Environmental Conservation (NYSDEC) State Pollution Discharge Elimination System (SPDES) permit requirements and/or by other agreements. In this regard, the objectives of the monitoring program include surveying all life stages of Atlantic sturgeon and shortnose sturgeon within defined Hudson River locations, time periods, habitats and depth strata using different gear types, while also surveying the river for other species of interest. The research will benefit the recovery of the sturgeon species by better defining the spatiotemporal distribution and population indices existing for all sturgeon life stages, as well as documenting the genetic components of the two species. No changes in the longstanding study design or methods are anticipated for the requested 5-year permit term.

Project Description

Purpose: We are seeking a NMFS Scientific Research Permit to exempt the potential take of shortnose sturgeon (*Acipenser brevirostrum*)(SNS) and Atlantic sturgeon (*Acipenser oxyrinchus*)(AS) for scientific research purposes during the annual HRBMP in accordance with section 10 of the Endangered Species Act (ESA).

Scientific objectives of the HRBMP include describing the environmental, physical/chemical parameter patterns and the spatiotemporal distribution of these listed species in the Hudson River estuary. The HRBMP data analysis yields long term Hudson River physical and chemical parameters, trends in numbers of fish collected by survey type, annual abundance indices, density and standing crop estimates, and length frequency distribution information. Additional species specific information will yield sturgeon data including morphometric measurements, mark & recapture data obtained in tagging, physical condition assessment, and an analysis of the genetic component through tissue sampling.

Our work will also complement the work of the New York State Department of Environmental Conservation (NYSDEC) in their efforts to characterize the species in the Hudson River. Additionally, our indices have been utilized extensively by the scientific community, regulatory agencies, foundations, supporting numerous scientific publications symposium presentations and other non-journal publications (Attachment G).

Description: The HRBMP is an extensive annual biological monitoring program, continuing from 1966 to the present, performed to assess potential impacts of cooling water withdrawals from electric power generating stations on the Hudson River ecology. Consequently, the HRBMP consists of numerous surveys developed and performed under the oversight and approval of regulators, including NYSDEC to document any adverse impact to the riverine environment. Within each program are individual sampling surveys, each of which covers a specific time period during the year and targets certain life stages of fish in their habitat through the use of appropriate sampling gear and procedures.

As stated, however, the current application is seeking authorization for the take of shortnose and Atlantic sturgeon during the various surveys. These surveys are categorized as: the Ichthyoplankton Survey, the Fall Shoals Fish Survey, the Beach Seine Survey, and the Striped Bass Survey.

Attachment A presents a typical HRBMP field collection schedule. As under the prior NMFS ESA Permit No. 1580-1, the planned HRBMP sampling schedule was developed in advance with scheduled sampling randomized for each gear type. Written notifications of planned field work are forwarded to the NMFS Assistant Regional Administrator for Protected Resources. HRBMP surveys and related activities are performed in accordance with detailed written protocols (referred to as Standard Operating Procedures [SOPs], each conforming to the conditions of NMFS scientific research permits.

Initially, after collecting a sturgeon species, biologists would process relevant data from the animal, including identifying the species, measuring the specimen, taking a genetic tissue sample, recording the locations and time sampled, noting the environmental conditions at the time of collection, and recording the habitat and regional water quality parameters. SNS and AS would also be marked with appropriate PIT and external Dart/Floy tags to support ongoing mark/recapture studies.

The following HRBMP surveys are defined by gear type, how they are deployed, location and time sampled during each of the surveys.

Longitudinal River Ichthyoplankton Survey (Ichthyoplankton Survey):

A determination of the seasonal occurrence, abundance, and distribution of target animals and eggs and larvae along the 152 linear miles of the tidal portion of the Hudson River (Battery Park [Manhattan] to Troy Dam [above Albany]). The Ichthyoplankton Survey is conducted over 23 weeks beginning in March and extending into early October of each year. The first three to five surveys each year are performed during the day, and the remaining surveys are at night, with about 200 samples per week collected at randomly selected tow paths allocated among 13 geographic regions, and three depth strata: pelagic, shoal, and bottom. The pelagic (channel) stratum is sampled with a 1 m² x 8 m long Tucker trawl equipped with a 500 micron mesh net. The shoals (river bottom found in 10-20 ft of depth) and bottom (river bottom found at depths >20 ft) are both sampled with a 1m² epibenthic sled equipped with a 1m² x 8 m long net of 500 micron nitex mesh. Sample volumes are determined using flume-calibrated flowmeters. Standardized deployment practices for each 5-minute tow ensure a sample volume of about 300 m³ ±10%. All larval and young fish captured in ichthyoplankton field samples are preserved with 10% buffered formalin. Older SNS and AS captured during the Ichthyoplankton Survey are subject to the specialized handling, tagging and release procedures identified in current permit 1580-1 at Section B. These compliance actions and criteria are presented in more detail in Ichthyoplankton Survey Standard Operating Procedures (Attachment B-1) and relate specifically to number and kinds of protected species to be taken, locations and manner of taking, capture, handling, holding, genetic sampling, tagging and photography.

Longitudinal River Fall Shoals Survey (Fall Juvenile Fish Study, Fall Shoals Survey):

A determination of the seasonal occurrence, abundance, and distribution of young of the year, (YOY), yearling and older age categories of target animals in the 152 mile portion of the Hudson River estuary between Battery Park and the Troy Dam. Sampling is performed during 8 to 12 alternate weeks spread between early July and late October of each year. Sampling is at night, with about 200 samples per week collected at randomly selected tow paths allocated among 13 geographic regions, and three depth strata. The pelagic (channel) stratum is sampled with a 1 m² Tucker trawl equipped with a 3 mm mesh net. The shoals (river bottom found in 10-20 ft of depth) and bottom (river bottom found at depths >20 ft) are sampled with a 0.9 m x 3 m beam trawl (1.3 mm stretch mesh cod end). Sample volumes are determined using flume-calibrated flowmeters. Standard deployment practices for each 5-minute tow ensure a variation in sample volume of less than 10%. SNS and AS captured during this survey and are subject to the specialized handling, tagging and release procedures identified in current permit 1580-1 at Section "B". These compliance actions and criteria are presented in more detail in Fall Juvenile Survey standard operating procedures (Attachment B-2) and relate specifically to number and kinds of protected species to be taken, locations and manner of taking, capture, handling, holding, genetic sampling, tagging and photography.

Longitudinal River Beach Seine Survey (Beach Seine Survey):

A determination of the seasonal occurrence, abundance, and distribution of YOY fishes in the shore zone (<10 ft. deep) along the 142 mile portion of the Hudson River estuary between Yonkers (George Washington Bridge) and the Troy Dam. Sampling is performed during 10 alternate weeks spread between early July and late October of each year. The Beach Seine Survey is coordinated with similar surveys performed by NYSDEC to ensure the same beaches are not sampled on the same dates. All sampling is performed during the day, with 100 randomly selected beaches sampled per week among 12 geographic regions. A 100 ft x 8 ft. bag seine is fished with 1.9 cm stretch mesh in the wings and 0.9 cm stretch mesh netting in the bag. Standard deployment practices for each seine haul ensure a sampling area swept of about 450 m² ±10%. SNS and AS YOY and larval species are occasionally sampled during the beach seine survey. The Beach Seine Survey Standard Operating Procedures are highlighted in Attachment B-2, 5.4.1.2--5.4.1.4. Researchers prioritize SNS and AS handling among all fish sampled, examining, measuring, holding, tagging, photographing and recovering SNS and AS in an expeditious return to the river.

Striped Bass Winter Population Survey (Striped Bass Survey):

Trawling in the lower Hudson River and New York Harbor habitat is done to estimate the bio-characteristics information of animals sampled. The Striped Bass Survey is presently performed from early November through mid-April of each year for 24 consecutive weeks of field sampling. Samples are taken using a 9 m trawl equipped with a 2.0 mm green polyethylene twisted twine mesh net following standard deployment practices for each 10 minute tow. Typically about 35-40 tows are taken weekly. SNS and AS are captured during this survey and are subject to the handling, tagging and release procedures identified in current permit 1580-1 at Section "B". These compliance actions and criteria are presented in more detail in Fall Juvenile Survey standard operating procedures (Attachment B-3) and relate specifically to the number and species taken, locations and manner of taking, capture, handling, holding, genetic sampling, tagging and photography.

Handling, Holding, and Tagging:

As mentioned above, adult and juvenile SNS and AS captured in the Ichthyoplankton Survey, Fall Juvenile Fish Study/Fall Shoals Survey, Beach Seine Survey, and Striped Bass Survey are subject to handling, holding measuring, weighing, tagging, photographing and release.

The handling procedures for SNS and AS are described in Attachment B-1, B-2, and B-3, consistent with current NMFS permit-1580 and include the following requirements:

- holding time is limited to 15 minutes;
- transfers conducted with a sanctuary net that holds water;
- smooth rubber gloves must be worn;
- weight measurement conducted with use of supportive net or sling; and
- prior to release sturgeon must be treated with an electrolyte bath to restore slime coat.
- total holding time may not exceed two (2) hours at temperatures <27°C, and thirty (30) minutes at temperatures above 27°C;
- sturgeon must be held in floating net pens or live cars during processing; and
- while onboard sturgeon must be held in flow-through tanks that allow total water replacement every 15-20 minutes and maintain dissolved oxygen at 5ppm.

The tagging procedures for SNS and AS are described in Attachment B-1, B-2, and B-3, consistent with current NMFS permit-1580, including the following requirements:

- previously PIT tagged sturgeon may not be re-tagged;
- PIT tags must be inserted immediately anterior of the dorsal fin
- PIT tags larger than 11.5mm x 2.1 mm may not be inserted into juveniles less than 300mm in length;
- sturgeon less than 250mm may not be tagged; and
- total weight of all fin tags may not exceed 2% of the fish's total body weight.

Historical and current SOPs, most recently approved by NYSDEC for the 2012 survey season, call for use of both PIT and Carlin-Ritchie tags. In other surveys, NYSDEC has moved to use of the Floy DART tags in place of the Carlin-Ritchie tags. The applicant anticipates that NYSDEC would approve a future request to modify the SOPs by replacing Carlin-Ritchie tagging with Floy DART tagging. The Carlin-Ritchie and Floy DART tagging methods are beneficial to mark-recapture studies because they provide a visual means of inspection for fisherman and other entities lacking equipment to detect PIT tags.

Supplemental Information

Status of Species: SNS, (*Acipenser brevirostrum*), the subject of this application are ESA-listed as endangered. The current Hudson River SNS population is the largest of 19 populations identified in the shortnose sturgeon recovery plan (NMFS 1998). Although no action has yet been taken to delist the Hudson River population of shortnose sturgeon, Bain (2007) estimated the abundance of this population during the 1990s to be approximately 60,000 fish, well above the threshold of 10,000 established by NMFS (1996) that would be adequate to support delisting, and Woodland and Secor (2007) noted that the Hudson River shortnose sturgeon is the largest of the 8 Atlantic coastal spawning populations for which abundance estimates are available. Based on the size of the population, the apparent health of the individual fish, and the quality of sturgeon habitat in the Hudson, Bain et al. (2007) concluded that the Hudson River population had recovered and may merit delisting.

Mark-recapture population estimates indicate a late 1990s shortnose sturgeon population of about 60,000 fish, with adults comprising more than 90% of the population (Bain et al. 2007). Compared to population estimates in the late 1970s, the Hudson River population has increased by more than 400% (Bain et al. 2007). Woodland and Secor (2007) also confirmed the recovery of the shortnose sturgeon population in the Hudson River during the late 1990s, and suggested that this recovery was driven by strong recruitment of juveniles during the period from 1986 through 1992.

In sum, the Hudson River supports the largest population of shortnose sturgeon throughout its range, and the current population has expanded from the 1970's through the 1990's (Bain et al. 2007) to represent peak abundance at this time.

AS (*Acipenser oxyrinchus*), also the subject of this application is ESA-listed as endangered. Data from a variety of sources indicates that the abundance of Hudson River Atlantic sturgeon...(CONTINUED IN ATTACHMENT H2)

Lethal Take:	Potential lethal take (larvae): Larval SNS and AS collected in ichthyoplankton samples are preserved for laboratory analysis. HRBMP annual reports indicate that 23 SNS larvae were collected between 2001 and 2010 (Attachment C), and 16 AS larvae were collected between 2001 and 2010 (Attachment C (AS)). Based on the most recent 10-year trend, the number of larval life stage SNS to be taken annually is expected to remain below the current authorized maximum of 40 specimens as identified in NMFS ESA Permit No. 1580 and summarized in application Attachment C and Attachment C (AS). The applicant does not anticipate an increase in effort compared to operations under NMFS ESA Permit No. 1580...(CONTINUED IN ATTACHMENT H2)
Anticipated Effects on Animals:	<p>It is important to underscore that HRBMP-captured SNS and AS juveniles and adults are not removed from the wild population, rather they are examined, tissue sampled, measured, tagged, photographed and returned to the river at the location of capture as part of an ongoing mark/recapture program. Virtually all of the adult and juvenile SNS and AS captured in the HRBMP are encountered during the Fall Shoals, Striped Bass Population and/or Longitudinal Ichthyoplankton Surveys. To further assess the potential for SNS or AS injury or mortality from interaction with the HRBMP collection gear, and from the handling, recovery/release process, a query of the HRBMP database was conducted focusing on SNS and AS captured during the HRBMP from 1999 through 2010. The SNS results are presented in Attachment D, and further supported in Attachment C. During the 1999–2010 period a total of 512 yearling & older SNS specimens were captured, handled, and released. The takes were distributed among the HPBMP Surveys as follows: Ichthyoplankton (31), Fall Juvenile (370), Striped Bass Population Survey (111). As the data indicate, all captured SNS specimens were released alive and in good condition (Attachment D).</p> <p>Similar for AS, the results are presented in Attachment D (AS), and further supported in Attachment C (AS). During the 1999–2010 period a total of 354 yearling & older AS specimens were captured, handled, and released. These AS were distributed among the HPBMP Surveys as follows: Ichthyoplankton (20), Fall Juvenile (299) and Striped Bass Population Survey (35). As the data indicate, all AS specimens were released alive and in good condition (Attachment D (AS)).</p> <p>No lasting effects are anticipated. The HRBMP gear and methods yield very favorable survival outcomes for captured and released juvenile and adult SNS and AS; these specimens are handled, processed, tagged and released expeditiously--typically returned to the capture location in a matter of minutes. Larval mortality is extremely infrequent, and at a life stage that is unlikely to impact population dynamics.</p> <p>No other protected species are expected to be impacted by the HRBMP activities in the Hudson River.</p>
Measures to Minimize Effects to Listed Species:	<p>The Generators retain and direct consultants Normandeau Associates, Inc., Bedford, NH (NAI). NAI utilizes specialized equipment and retains management, supervisory, technical personnel in support of the HRBMP. NAI services include extensive field fisheries and water quality surveys, ichthyoplankton laboratory services, data management, quality control/quality assurance services, program management, and other consulting services.</p> <p>NAI conducts the fisheries field program in accordance with NYSDEC-approved standard operating procedures and current NMFS ESA Permit 1580-1 to ensure that adverse effects are minimized. The study description includes detail on the specific measures employed during handling, holding and tagging of SNS and AS. Further, if, in the judgment of the Principal Investigator (PI) and/or Co-investigators (CI), complete processing of SNS or AS is likely to endanger the survival of the fish, the minimum processing (identification to species) will be performed and the specimen released to the river immediately with accompanying comments recorded;</p> <p>Attachment E to this application provides a list of key NAI technical personnel identified in field roles. Five CIs working at the direction of the PI, will handle, work-up, and release SNS and AS on board the research vessels. These five CI have a combined 116 years leading crews engaged in HRBMP field work including handling, tagging and releasing SNS and AS in accordance with NMFS ESA permit requirements. Four of the five CI have more than 20 Years experience with the field aspects of the HRBMP, handling SNS and AS in particular. Researchers (typically 2 per vessel) assist the CI and gain experience in SNS and AS identification, condition assessment, holding, tagging, recovery and release techniques.</p>
Resources Needed to Accomplish Objectives:	The HRBMP has been a condition of NYSDEC's SPDES permits held by the Generators since 1982. Specialized consultants are retained by the Generators to conduct the field, laboratory, quality assurance and reporting aspects with direct oversight by the Principal and Co-Investigators. NYSDEC not only requires, but oversees, the conduct of the HRBMP.
Disposition of Tissues:	Collection of SNS/AS eggs and/or larvae is an extremely rare occurrence due to the sampling depth of the plankton trawls. In the event that SNS/AS eggs and/or larvae are collected, the specimens are immediately preserved in a 10% formalin solution. Juvenile and adult SNS/AS captured in the field are processed and immediately returned to the Hudson River as described in previous application sections and Attachments B-1, B-2 and B-3. Biological specimens of juvenile and/or adult SNS/AS are only retained and transported if a lethal take occurs, which has not occurred since 2001. As described in SOPs (Attachment B-1), biological tissue for the purposes of archiving and genetic study is collected in the field from live SNS/AS, preserved in 90-100% ethanol and transferred to NOAA–NOS.
Public Availability of Product/Publications:	Results of the HRBMP are reported annually in documents entitled: Year Class Report for the Hudson River Estuary Monitoring Program (YCR). These reports include data on size/life stage distribution of SNS/AS as well as other species encountered; typically the YCR is finalized eighteen (18) months following field effort. The reports are widely distributed to and often employed by the regulatory community, industry, academia, and other interested parties. A list of over 100 scientific publications, many peer reviewed, relying on HRBMP data is included in Attachment G, underscoring the importance of the HRBMP to the scientific and regulatory community (and therefore the importance of this permit, which is a predicate to continuing the HRBMP).

Location/Take Information

Location

Research Area: Atlantic Ocean **State:** NY **Stream Name:** Hudson River **Begin Mile:** **End Mile:** 152.0

Location Description: The HRBMP study area includes the Hudson River from the Troy Dam (north of Albany) to the Battery (Manhattan). The study area is divided into 13 segments, also referred to as regions. Selection of sampling locations is described in Att. B-1, B-2, B-3.

Take Information

Line	Ver	Species	Listing Unit/Stock	Production /Origin	Life Stage	Sex	Expected Take	Take Action	Observe /Collect Method	Procedure	Transport Record	Begin Date	End Date
1		Sturgeon, shortnose	Range-wide (NMFS Endangered)	Wild	Adult/ Juvenile	Male and Female	82	Capture/Handle/Release	Net, trawl	Mark, dart; Mark, PIT tag; Measure; Sample, other tissue ; Weigh	N/A	1/20/2012	8/28/2017
Details: Juvenile/Adult SNS collection. Hudson River mile 0 (Battery) to RM 152													
2		Sturgeon, shortnose	Range-wide (NMFS Endangered)	Wild	Egg/ Larvae	Male and Female	40	Intentional (Directed) Mortality	Net, trawl	Other	N/A	1/20/2012	8/28/2017
Details: Ichthyoplanton: preserve, analyze, archive													
3	B	Sturgeon, Atlantic	New York Bight (NMFS Endangered)	Wild	Adult/ Juvenile	Male and Female	200	Capture/Handle/Release	Net, trawl	Mark, dart; Mark, PIT tag; Measure; Sample, other tissue ; Weigh	N/A	3/13/2013	8/28/2017
Details: Juvenile/Adult A.St. collection. Hudson River mile 0 (Battery) to RM 152													
4		Sturgeon, Atlantic	New York Bight (NMFS Endangered)	Wild	Egg/ Larvae	Male and Female	40	Intentional (Directed) Mortality	Net, trawl	Other	N/A	1/20/2012	8/28/2017
Details: Ichthyoplanton: preserve, analyze, archive													

NEPA Checklist

1) If your activities will involve equipment (e.g., scientific instruments) or techniques that are new, untested, or otherwise have unknown or uncertain impacts on the biological or physical environment, please discuss the degree to which they are likely to be adopted by others for similar activities or applied more broadly.

Applicant Response: No use of new or untested equipment and/or techniques is planned. HRBMP collection and processing techniques are established and have been consistently applied over time, subject to NYSDEC oversight.

2) If your activities involve collecting, handling, or transporting potentially infectious agents or pathogens (e.g., biological specimens such as live animals or blood), or using or transporting hazardous substances (e.g.,

toxic chemicals), provide a description of the protocols you will use to ensure public health and human safety are not adversely affected, such as by spread of zoonotic diseases or contamination of food or water supplies.

+-Applicant Response: HRBMP field personnel do not collect, handle, or transport potentially infectious agents or pathogens (e.g., biological specimens such as live animals or blood). Juvenile and adult SNS/AS captured in the field are immediately returned to the Hudson River, not retained and transported, after scientific processing as described in previous application sections and in Attachments B-1, B-2 and B-3 and summarized below, with no significant pathogenic risk. SNS/AS larvae are preserved and transported, but only after preservation, as described in Attachments B-1, B-2 and B-3 and summarized in Attachment H, with no significant pathogenic risk.

3) Describe the physical characteristics of your project location, including whether you will be working in or near unique geographic areas such as state or National Marine Sanctuaries, Marine Protected Areas, Parks or Wilderness Areas, Wildlife Refuges, Wild and Scenic Rivers, designated Critical Habitat for endangered or threatened species, Essential Fish Habitat, etc. Discuss how your activities could impact the physical environment, such as by direct alteration of substrate during use of bottom trawls, setting nets, anchoring vessels or buoys, erecting blinds or other structures, or ingress and egress of researchers, and measures you will take to minimize these impacts.

Applicant Response - Physical Characteristics: The HRBMP study area extends in excess of 150 miles from the Troy Dam (north of Albany) to the Battery (Manhattan). The lower Hudson River estuary contains a variety of habitats, including tidal marshes, intertidal mud flats, and subtidal aquatic beds. There are four locations within the study area that have been designated as National Estuarine Research Reserve System Sites by the National Oceanic and Atmospheric Administration (NOAA) and NYSDEC: Stockport Flats, Tivoli Bay, Iona Island, and Piermont Marsh. Portions of the Hudson River Estuary have also been designated as Essential Fish Habitat for several species: red hake (*Urophycis chuss*), winter flounder (*Pleuronectes americanus*), windowpane flounder (*Scophthalmus aquosus*), Atlantic sea herring (*Clupea harengus*), bluefish (*Pomatomus saltrix*), Atlantic butterfish (*Peprilus triacanthus*), Atlantic mackerel (*Scomber scombrus*), summer flounder (*Paralichthys dentatus*), scup (*Stenotomus chrysops*), and black sea bass (*Centropristus striata*).

Additional response included in Attachment H.

4) Briefly describe important scientific, cultural, or historic resources (e.g., archeological resources, animals used for subsistence, sites listed in or eligible for listing in the National Register of Historic Places) in your project area and discuss measures you will take to ensure your work does not cause loss or destruction of such resources. If your activity will target marine mammals in Alaska or Washington, discuss measures you will take to ensure your project does not adversely affect the availability (e.g., distribution, abundance) or suitability (e.g., food safety) of these animals for subsistence uses.

Applicant Response: The proposed action will not affect entities listed in or eligible for listing in the National Register of Historic Places or cause loss or destruction of scientific, cultural, or historic resources. The HRBMP study area extends in excess of one hundred fifty miles from the Troy Dam (north of Albany) to the Battery (Manhattan). A number of cultural and historical resources are located in counties that bound the study area, however, the applicant is not aware of any sites located within the Hudson River waterbody that could potentially be affected by the proposed action. The proposed action has not impacted scientific, cultural, or historic resources in the past and is not expected to affect these resources in the future.

5) Discuss whether your project involves activities known or suspected of introducing or spreading invasive species, intentionally or not, (e.g., transporting animals or tissues, discharging ballast water, use of equipment at multiple sites). Describe measures you would take to prevent the possible introduction or spread of non-indigenous or invasive species, including plants, animals, microbes, or other biological agents.

Applicant Response: The HRBMP does not involve activities known or suspected of introducing or spreading invasive species. The HRBMP does not involve the transportation of any unpreserved biological material, from one study area to another. As discussed above, (1) all SNS/AS and other ichthyoplankton are preserved in a 10% formalin solution and transported to the laboratory for routine processing; and (2) All SNS/AS biological material for the purposes of genetic study and archiving is extracted in the field from live SNS specimens, preserved in 90-100% ethanol, and transported to NOAA-NOS under NOAA/NMFS custody protocols.

Additional response included in Attachment H.

Project Contacts

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Primary Contact: Dara F Gray

Principal Investigator: Mark Mattson

Other Personnel:

Name	Role(s)
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Christopher Co-Investigator
Burnett
Christine Co-Investigator
Croyle
William R. Co-Investigator
Furman
Dara F Co-Investigator
Gray
Michael J Co-Investigator
Ricci
Scott Co-Investigator
Schanke
Charles Co-Investigator
Sweeney

Attachments

Application Archive - P17095T14Issued.pdf (Added Sep 4, 2012)
Contact - Charles Sweeney: C11576T517095 Sweeney_CV.pdf (Added Apr 19, 2012)
Contact - Charles Sweeney: C11576T5Sweeney_C.pdf (Added Jan 23, 2012)
Contact - Christine Croyle: C15829T5CV_Croyle R1_jac.pdf (Added Jan 23, 2012)
Contact - Christopher Burnett: C11575T517095 Burnett_CV.pdf (Added Apr 19, 2012)
Contact - Christopher Burnett: C11575T5Burnett_C.pdf (Added Jan 23, 2012)
Contact - Dara F Gray: C15827T5D F Gray_Entergy Indian Point.pdf (Added Jan 23, 2012)
Contact - Mark Mattson: C15828T5Mattson_M.pdf (Added Jan 20, 2012)
Contact - Mark Mattson: C6410T517095 Mattson_M CV.pdf (Added Apr 19, 2012)
Contact - Michael J Ricci: C11574T517095 Ricci_M CV.pdf (Added Apr 19, 2012)
Contact - Michael J Ricci: C11574T5Ricci_M.pdf (Added Jan 23, 2012)
Contact - Scott Schanke: C15830T517095 Schanke_S CV.pdf (Added Apr 19, 2012)
Contact - Scott Schanke: C15830T5Schanke_S.pdf (Added Jan 23, 2012)
Contact - William R. Furman: C11578T517095 Furman_W CV.pdf (Added Apr 19, 2012)
Contact - William R. Furman: C11578T5Furman_W.pdf (Added Jan 23, 2012)
Project Description - P17095T1NMFS # 17095 ESA App Att - C(AS) 2-13-2012.pdf (Added Feb 22, 2012)
Project Description - P17095T1NMFS # 17095 ESA App Att - D(AS) 2-9-2012.PDF (Added Feb 22, 2012)
Project Description - P17095T1NMFS #17095 ESA App Cert-Signature - 1-30-2012.PDF (Added Jan 31, 2012)
Project Description - P17095T1NMFS #17905 Cover LTR_HRBMP ESA take application_Jan 20 2012.pdf (Added Jan 24, 2012)
Project Description - P17095T1NMFS ESA App Att - H2_3-22-2012.pdf (Added Mar 22, 2012)

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Entergy Nuclear Operations, Inc. received Permit to Take Protected Species for Scientific Purposes No. 17095 effective on 28 August 2012 and expiring on 28 August 2017. Paragraph III.B.1 and Appendix 1 Table 1a of Permit No. 17095 specifies the non-lethal take of 82 juvenile (<500 mm) and juvenile, sub-adult, and adult (>500 mm) of Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus) and 82 juvenile, sub-adult, and adult shortnose sturgeon (Acipenser brevirostrum) in each annual permit year beginning 28 August 2012. Research sampling activities performed under Permit No. 17095 for the Hudson River Biological Monitoring Program (HRBMP) in the Hudson River between Battery Park (River Mile 0) and the Troy Dam (River Mile 152) from 28 August 2012 through 21 November 2012 have captured a total of 74 Atlantic sturgeon and 10 shortnose sturgeon. All sturgeon of both species caught to date in 2012 were processed as specified in Permit no. 17095 and released alive and in good condition. While the capture rates for shortnose sturgeon in 2012 have been consistent with historic (1999-2011) capture rates, the capture rates for Atlantic sturgeon during 2012 to date have been much higher than historic (1999-2011) capture rates as follows:

2012 Atlantic sturgeon non-lethal capture rate = 1 fish per 9.5 beam trawl samples and 1 fish per 5.8 striped bass trawls.

Recommend New Non-Lethal Take Limits for Atlantic Sturgeon for Modification

1999-2011 historic average Atlantic sturgeon non-lethal capture rate = 1 fish per 56.7 beam trawl samples and 1 fish per 253.5 striped bass trawl tows.

At the present (2012) high capture rate for the beam trawl samples and striped bass trawl tows it is likely that the annual authorized non-lethal take of 82 Atlantic sturgeon (Appendix 1 Table 1a) will be exceeded after only three months of HRBMP sampling activities. All of the 74 Atlantic sturgeon caught from 28 August through 19 November 2012 were juveniles (57 fish 80 mm tl to 481 mm tl) or sub adult fish (17 fish from 500 mm tl to 1081 mm tl), indicating that the catch to date from 2012 represents a strong cohort of juvenile fish in the Hudson River (New York Bight DPS) stock and that an annual non-lethal take limit of 82 fish is not large enough to sufficiently reflect the anticipated recovery of this stock in the present or future years of HRBMP sampling activities under Permit No. 17095.

Based on the observed catch per tow for the first three months of Hudson River Biological Monitoring Program sampling performed under Permit #17095, we request that the non-lethal take of juvenile, sub-adult and adult Atlantic sturgeon authorized under Permit No. 17095 as specified in Appendix 1 Table 1a be increased from 82 fish per year up to 200 fish per year, but not exceeding a total of 600 Atlantic sturgeon over the life of the remaining permit. We also clarify that the sampling activities for juvenile, sub-adult and adult shortnose sturgeon and Atlantic sturgeon includes upper New York Harbor through River Mile 152.

It is important to note that there has never been an unintentional lethal take of juvenile, sub-adult or adult sturgeon of either species resulting from sampling activities performed for the HRBMP.

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Request of Film Crew Authorization

A request to amend the permit to authorize a 2 man film crew working with the Hudson River Foundation from now until December 31, 2013.

Issued 12/21/2012 03/13/2013 P17095T14Mod2.pdf

Issued 09/17/2013 09/17/2013 P17095T14Mod3.pdf

Reports

Reports Required

Nbr	Report Type	Report Period		Date Due	Status	Date Received
		Start Date	End Date			
1	Annual-Year End	08/29/2012	08/28/2013	11/28/2013	Submitted	11/21/2013
1	Incident				Draft	
2	Annual	08/29/2013	08/29/2014	11/28/2014	Draft	
3	Annual	08/29/2014	08/29/2015	11/28/2015	N/A	

4	Annual	08/29/2015	08/29/2016	11/29/2016	N/A
5	Annual	08/29/2016	08/29/2017	11/28/2017	N/A
6	Final	08/29/2012	08/28/2017	02/28/2018	N/A